



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :  
NAKAYAMA : GROUP ART UNIT: 1712  
Serial No. 10/542,718 :  
Filed: July 20, 2005 : EXAMINER: ZIMMER, MARC S  
For: EPOXY :  
GROUP-CONTAINING :  
SILICON COMPOUND AND :  
THERMOSETTING RESIN :  
COMPOSITION :

D E C L A R A T I O N

Honorable Commissioner of  
Patents & Trademarks  
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on August 2, 2007 <sup>1450</sup> (Date)

Kevin S. Lemack  
Name of applicant, assignee, or Registered  
Representative

[Signature]  
Signature  
August 2, 2007  
Date

Sir:

I, Ryuji UEHARA, a Japanese citizen, c/o  
Functional Chemicals R&D Laboratories of Nippon Kayaku,  
Co., Ltd., 31-12, Shimo 3 chome, Kita-ku, Tokyo, Japan,  
declare:

That I graduated from Tokyo University of  
Science, Faculty of Science, Department of Chemistry in  
March 1991;

That I entered Nippon Kayaku Co., Ltd. in  
April 1991;

That I have engaged in research and development of the invention of the above-identified application (i.e. EPOXY GROUP-CONTAINING SILICON COMPOUND AND THERMOSETTING RESIN COMPOSITION) since June 2005 in Functional Chemicals R&D Laboratories;

That I am familiar with the invention of the above-identified application and the prosecution history of the application;

That I have read and understand the official action issued against the above-identified application on May 16, 2007 and the prior art references cited therein;

That in order to prove that an unexpected result can be obtained in the scope of the claims of the above-identified application, I conducted the following experiments:

#### Experiment 1 (Invention)

1-a). An epoxy group-containing silicon compound (A) was synthesized in accordance with the method described in Example 1 of the present specification.

1-b). A thermosetting resin composition was prepared using the epoxy group-containing silicon compound (A) in accordance with the method described in Example 2 of the present specification. A cured product was formed from the thermosetting resin composition in the same manner as described in the example.

1-c). When storage modulus of the cured product was measured by a dynamic viscoelasticity measuring apparatus (DMA), a great decrease of the storage modulus was not seen (as shown in Figure 1 attached to the present application) and the glass transition temperature was at least 105 degree Celsius.

#### Experiment 2 (Comparison)

2-a). An epoxy group-containing silicon compound (B) was synthesized in accordance with the method described in Example 1 of the present specification except that methanol was used as a solvent instead of methyl isobutyl ketone.

2-b). A thermosetting resin composition was prepared using the epoxy group-containing silicon compound (B) in accordance with the method described in Example 2 of the present specification. A cured product was formed from the thermosetting resin composition in the same manner as described in the example.

2-c). When storage modulus of the cured product was measured by a dynamic viscoelasticity measuring apparatus (DMA), an inflection point was observed. It was estimated from the inflection point that the glass transition temperature was 64 degree Celsius.

The above results revealed that a cured product obtained from an epoxy group-containing silicon compound produced using methyl isobutyl ketone as solvent (satisfying the requirement of the present invention) was much more excellent in heat resistance than that obtained from an epoxy group-containing silicon compound produced using methanol (not falling within the present invention).

The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 25<sup>th</sup> day of July, 2007.

Ryuji Uehara  
Ryuji UEHARA